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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,858	05/13/2005	Masayuki Hashimura	52433/795	9080

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KENYON & KENYON LLP  
ONE BROADWAY  
NEW YORK, NY 10004

EXAMINER
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YEE, DEBORAH

ART UNIT	PAPER NUMBER
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1793

NOTIFICATION DATE	DELIVERY MODE
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10/11/2007

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@kenyon.com

**Office Action Summary**

Application No.

10/534,858

Applicant(s)

HASHIMURA ET AL.

Examiner

Deborah Yee

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 7-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>8-18-06</u> . | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claims 1 to 6, drawn to steel alloy composition.

Group II, claims 7 to 10, drawn to method of producing steel comprising the steps of cast molten metal at 10 to 100C/min, then cooling at a cooling rate of at least 0.5C/sec in a range from an A3 point to 550C.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The common technical feature that Groups I and II share is the composition of claim 1. This composition does not provide a contribution over the prior art as evident by Japanese patent 2000-160284 or Japanese patent 2-47240. Thus the two Groups lack unity of invention, see MPEP 1850.

3. During a telephone conversation with Mr. John Kelly on August 17, 2007 a provisional election was made with traverse to prosecute the invention of Group I, claims 1 to 6. Affirmation of this election must be made by applicant in replying to this Office action. Claims 7 to 10 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 3, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese patent 2000-160284 (hereinafter JP'284) cited by Applicants in IDS dated August 18, 2006.

7. JP'284 in table 1 on page 4 discloses specific steel examples 4 to 6 and 8 to 10 that meet the claimed composition and when calculated, satisfy the claimed Mn/S ratio of 1.2 to 2.8. Moreover, steels have excellent machinability and in table 3 on page 5 exhibit high surface roughness (Ra) of not more than 11  $\mu\text{m}$  as recited by the claims. In addition, JP'284 does not teach or suggest steel having a pearlite microstructure.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 2, 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent 02047240 (hereinafter JP'240) cited by Applicants in IDS dated August 18, 2006.

10. JP'240 in table 1 on page 268 discloses specific steel examples 12 and 19 that meet the claimed composition and when calculated, satisfy the claimed Mn/S ratio of 1.2 to 2.8. Also MnS density of example 12 is  $2.3 \times 10^{-4}$  and example 19 is  $9.6 \times 10^{-4}$ , and hence meet the claimed MnS density range of at least  $10^{-4}$ . The English abstract discloses the MnS dispersed in the steel have a diameter ranging from 0.1 to 10  $\mu\text{m}$ , which encompasses and therefore suggest Applicants' claimed range of 0.1 to 0.5  $\mu\text{m}$ .

11. Even though prior art does not teach a surface roughness Rz of the steel being not more than 11  $\mu\text{m}$  as recited by the claims, such property would be expected since composition, Mn/S ratio, MnS density are closely met, and in absence of proof to the contrary.

12. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent 02047240 (hereinafter JP'240) as applied to claims 1, 2, 4 and 6 above, and further in view of Japanese patent 2000-160284 (hereinafter JP'284).

13. JP'240 steel closely meets the recited claim for the reasons state above but fails to teach 0.0005 to 0.05 wt% B. It is, however, well known in the metallurgical art that B is a common element conventionally added to steel to further enhance hardneability as

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taught by JP'284 in paragraph [0029]. Since hardenability is a desired and sought property by JP'240, then it would be an obvious modification well within the skill of the artisan to incorporate B to JP'240 steel in view of the JP'284 teaching to produce no more than the known and expected effect from such addition.

***Allowable Subject Matter***

14. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter: The art of record does not teach or fairly suggest a steel superior in machinability having a composition, as recited by the claim 5, containing B in the amount between 0.002 to 0.014 wt% and S in the amount of 0.25 to 0.75 wt% such that the amount of S and B are within a region surrounded by A, B, C and D shown in Figure 4 where the contents of S and B satisfy the equation  $1, (B-0.008)^2 / 0.006^2 + (S-0.5)^2 / 0.25^2 \leq 1$  and steel contains sulfides with BN precipitated in the MnS.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on Monday-Friday 6:00 am-2:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Deborah Yee/  
Primary Examiner  
Art Unit 1742

/DY/